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◆ CGI Areas of R&D expertise

- Satellite, airborne, and ground remote sensing systems
- Advanced signal & image processing methods for:
feature extraction, target detection/tracking, pattern recognition, geolocation, conflation, change detection, multi-source data fusion, underground facility detection
- Geospatial data development, integration, application tools, network analysis, etc.
- Imagery exploitation via GeoWeb services

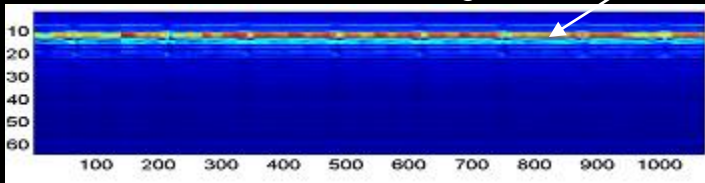
- Current / Recent work:
 - Change Detection – Digital Globe
 - PowerScape – data development – Boeing
 - Human Geography – NGA
 - Conflation - Boeing
- Can do classified work
 - Cleared faculty and students
 - Internships
- Certificate Programs
 - Geographic Information Systems
 - Geospatial Intelligence

Sub-Surface Mine Detection

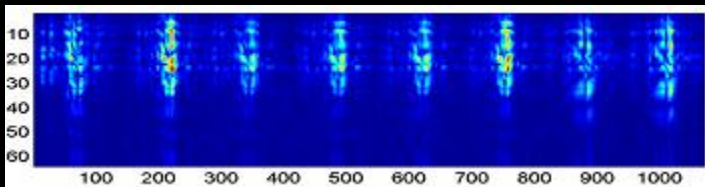
Hand-held System



Before Processing



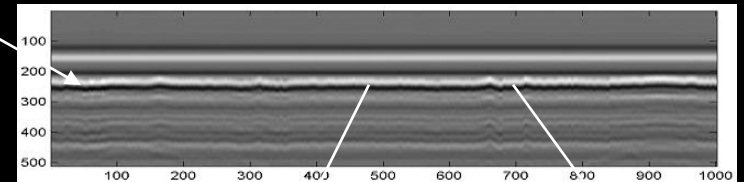
After Processing



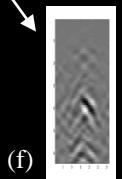
Vehicle Mounted System



Before Processing



After Processing



Operational Deployment

From: Sherburne, Douglas M Mr CAMBER
[mailto:douglas.sherburne@nvl.army.mil]
Sent: Fri **4/23/2004** 8:47 AM
To: [Ho, Dominic K.](#); Frank Rotondo (E-mail); Mike Ritondo (E-mail);
Cc: Santiago, Angel L Mr RDECOM CERDEC NVESD
Subject: AN/PSS-14 in Afghanistan

*All - attached is a very recent photo taken **April 04 in Afghanistan** using our AN/PSS-14 (HSTAMIDS) in mine detection mission. Thought this might bring back some pleasant memories and serve as a symbol of thanks for all you did to make this happen.*

Doug



Operational Deployment

Letter to Chancellor 4-2-07



DEPARTMENT OF THE ARMY
U.S. ARMY RESEARCH, DEVELOPMENT & ENGINEERING COMMAND
COMMUNICATIONS-ELECTRONICS RESEARCH, DEVELOPMENT & ENGINEERING CENTER
NIGHT VISION & ELECTRONIC SENSORS DIRECTORATE
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FORT BELVOIR, VIRGINIA 22060-5006

AMSRD CER NV CM

2 April 2007

Dr. Brady J. Deaton
Chancellor
University of Missouri-Columbia
Office of the Chancellor
105 Jesse Hall
Columbia, MO



Dear Dr. Brady J. Deaton


I'm writing to express my deep appreciation for the exceptional work of Professor K.C. Ho.

For the last three years, Professor Ho has made outstanding signal processing contributions to several key US Army detection programs. These programs address the extremely difficult national problem of finding buried land mines and improvised explosive devices.

Professor Ho's work in developing new feature based algorithms for a new ground penetrating radar system was the key to the program's success. Based upon his work, the US Army is in position to deploy its first vehicular-mounted detection system. This is an extremely important milestone for the US Army in supporting our soldiers in an extremely dangerous mission.

These detection programs are complex involving several contractors, other university researchers, as well as foreign and US government investigators. Professor Ho's work on spectral features combined with his efforts on fusion provided a significant boost in system performance. He was extremely responsive in meeting short deadlines and working efficiently and effectively under the extreme pressure of changing requirements and priorities. Throughout this effort, Professor Ho was very innovative, thoroughly professional, and extremely cooperative. Without his efforts, this important national program could not have succeeded.

On behalf of the US Army and our soldiers, please pass our sincere thanks and compliments to Professor Ho. You are indeed fortunate to have him as part of your university, and I look forward to working with him in the future.


Richard C. Weaver
Director
Countermine Division

CF: Dr. James S. Coleman
CF: Dr. James E. Thompson
CF: Dr. William C. Nunnally

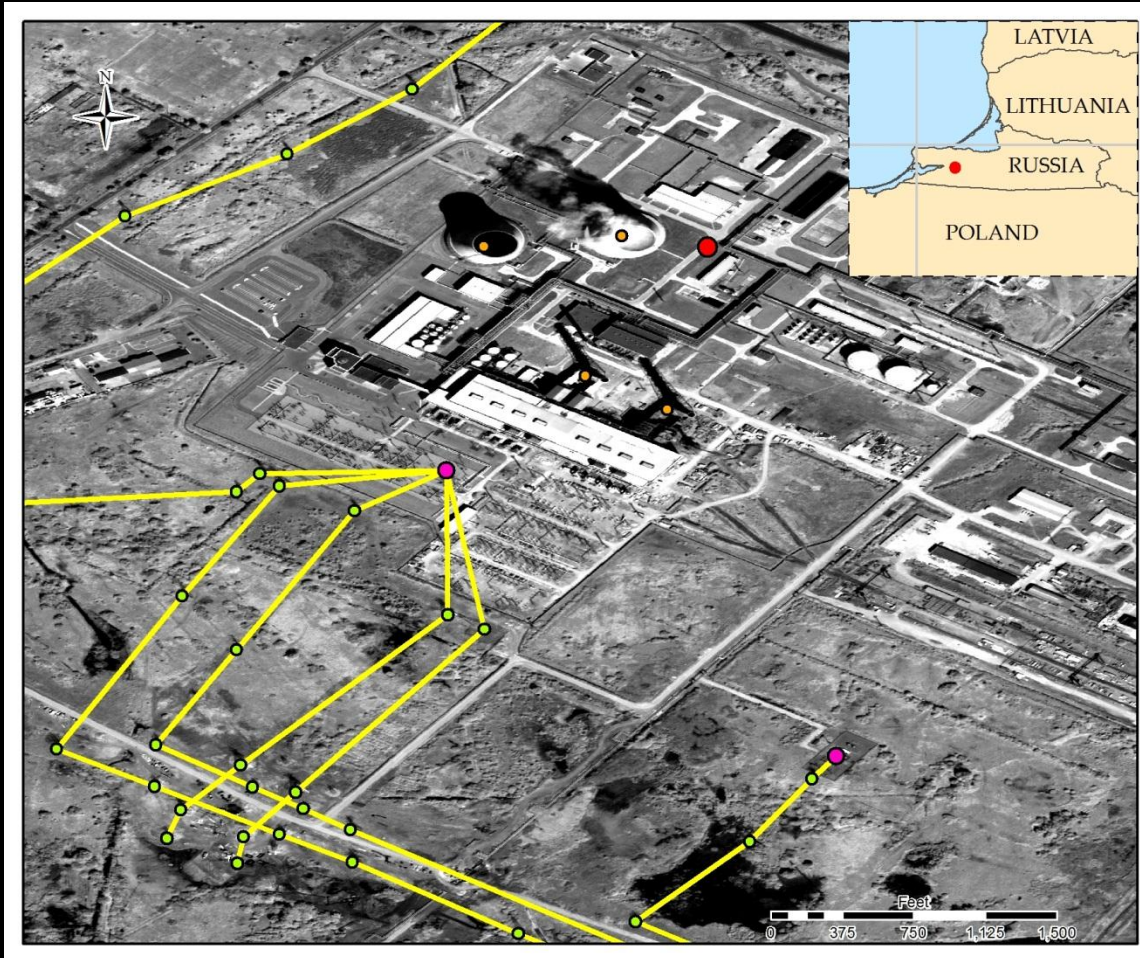


".. outstanding signal processing contributions for U.S. Army's first vehicle mounted system."

"This is an extremely important milestone for the U.S. Army in supporting our soldiers in an extremely dangerous mission."

NGA / GGI Boeing PowerScape

Task Order



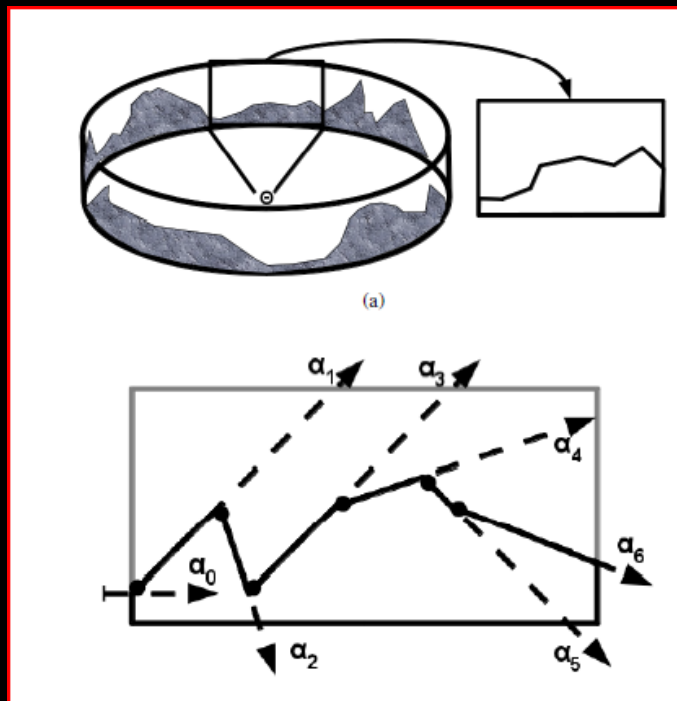
Example AOI: Russian Baltic

Extraction process:

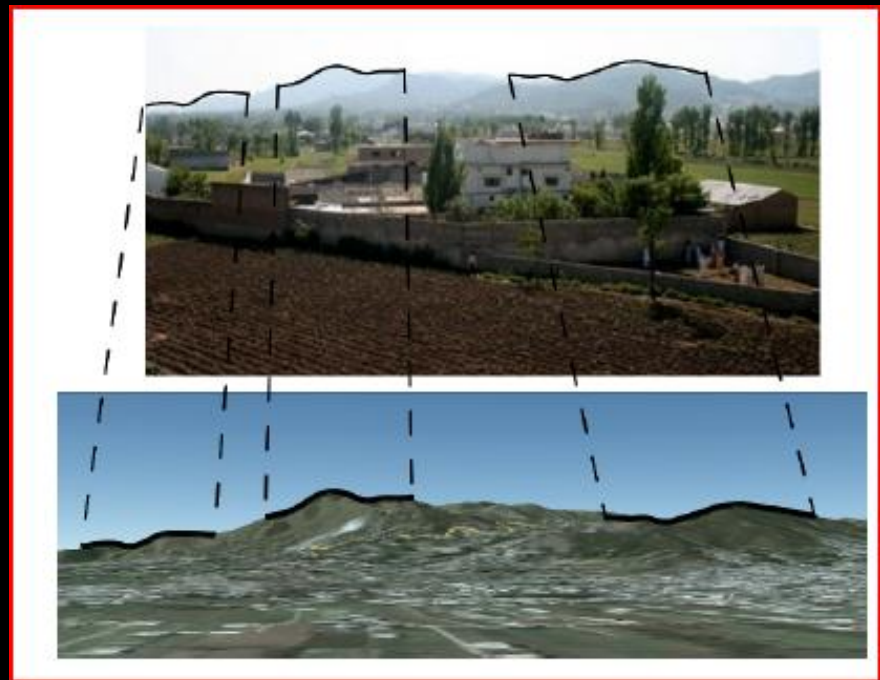
Using VHR EO satellite imagery, features were extracted by student / staff to the NGA spec geodatabase using ISO 9000 processes and protocols

Geolocation of Ground Images - Terrain Silhouette Matching to Worldwide DEM

Segment Window
Extraction and Encoding



Segment Matching to DEM



Discussion Elements

- Delivered: Algorithms / Software / Systems / Data Products to office / field / theater
- Non-Disclosure Agreements
- CRADAs
- Intellectual Property – IP issues
- Patents
- Commercialization / royalties



Academia Points

- “for the good of the cause” no longer the mantra
- More of a business now with State budgets decreasing we need funding for students, salary, and research, etc.
- STILL not-for-profit
- STILL educating the future workforce
- STILL a lower cost option